THE ORIGIN AND NATURE OF THE LINGUISTIC PARASITE

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> Whatever these difficulties may be, and whatever their biological origin, it is clear that, at the level of concepts, categorization is carried out neither by rigorous, nor by logical, nor by universal criteria. Indeed, there may be no general means by which categories are formed at this level. (Edelman 1987: 246)

The philosophy of language comes in three varieties.

1. The functionalist's view: linguistic forms are instruments used to convey meaningful elements. This is the basis of European structuralism.
2. The formalist's view: linguistic forms are abstract structures which can be filled with meaningful elements. This is the basis of generative grammar.
3. The parasitologist's view: linguistic forms are vehicles for the reproduction of meaningful elements. This is the view which I advocated twenty years ago in the Festschrift for Werner Winter's 60th birthday (1985).

Here I intend to discuss the evolutionary origin and the physiological nature of the linguistic parasite.

My theory of language is wholly consistent with Gerald Edelman's theory of neuronal group selection. The latter makes three fundamental claims (Edelman 1987: 5):

> 1. Diversification of anatomical connectivity occurs epigenetically during development, leading to the formation by selection of primary repertoires of structurally variant neuronal groups. The diversification is such that no two individual animals are likely to have identical connectivity in corresponding brain regions. […]
> 2. A second selective process occurs during postnatal behavior through epigenetic modifications in the strength of synaptic connections within and between neuronal groups. As a result, combinations of those particular groups whose activities are correlated with various signals arising from adaptive behavior are selected. […]
> 3. Coherent temporal correlations of the responses of sensory receptor sheets, motor ensembles, and interacting neuronal groups in different brain regions occur by means of reentrant signaling. Such signaling is based on the existence of reciprocally connected neural maps. […]

Linguistic meanings are combinations of neuronal groups whose activities are correlated with the responses of sensory reception sheets connected with hearing and motor ensembles connected with speaking and their interactions. Language differs

from bird song in allowing continuous and coherent correlation of various temporal and spatial aspects of a neural construct with at least some features of a real-world object which is not speech (cf. Edelman 1987: 108). Linguistic meanings are instances of categorical memory, combining relatively long-term changes at the cellular level with continuing creation of variants in certain synapses (cf. Edelman 1987: 205). They are subject to a Darwinian competition between various groups for cortical representation space as different stimuli are successively encountered; the most competitive groups are those that are associated with the most frequently stimulated peripheral locations (cf. Edelman 1987: 171). Local movement of map borders is accounted for by the trading of cells between adjacent groups; continuous alteration in map boundaries is the physiological correlate of the non-constructibility of linguistic meanings which I discussed in my earlier contribution (1985).

The sensorimotor channels of speaking and hearing can be regarded as the male and female sex organs of the linguistic parasite. The successful transmission of a message from a speaker to a hearer produces a mapping which correlates various aspects of a neural construct with identifiable features of real-world objects in the environment. A linguistic analysis must therefore start from a correlation of physical aspects of the speech flow with identifiable features of objects and events in the real world. The physical world is perceived as disjunctively partitioned in polymorphous sets, and neuronal groups are disjunctively partitioned by selection as a result of reentrant mapping of disjunctions of partitions in polymorphous sets of signals (cf. Edelman 1987: 262). As a result, there is no isomorphism with the signal domain in global mappings. The combinability of linguistic meanings presupposes the decomposability of neuronal groups and their interconnections as well as the possibility of creating new subcircuits by a variety of neurotransmitters. These allow the speech flow to convey a representation of identifiable features of objects and events in the real world from the speaker to the hearer, creating in the latter a neural construct which is isofunctional with an image constructed in the former. The isofunctional character of the representation, which correlates various aspects of a neural construct with identifiable features of real-world objects, detaches the image from its carrier and thereby gives rise to an independent organism which is parasitic upon the human brain, competing for cortical representation space.

It must be realized that the concept of language as a system of neural constructs which are correlated with identifiable features of real-world objects and move from one brain to the next by means of a device which resembles bird song is at variance with the functionalist view of language as an instrument used by a speaker to express his thoughts, which does not account for the adverse effects of linguistic behavior (cf. Kortlandt 1985), and is opposed to the formalist view of language as a set of abstract rules and representations, which does not explain categorization and is irreconcilable with biological reality (cf. Edelman 1987: 38). The functionalist paraphrase of the statement S that X is the case as “I want you to

think that I think that X is the case" can now be reformulated as "my linguistic parasite tries to create in your brain a neural construct which is isofunctional with the neural image of S constructed in my brain" (cf. also Grace 1987).

In accordance with the theory advocated here, the exploratory behavior of linguistic meanings in the human brain bears a strong resemblance to ant foraging (cf. Gerhart and Kirschner 1997: 146-151). The complex large-scale pattern of ant movements is a consequence of many simpler responses, viz. the individual responses of single ants to the distribution of food. Ants leaving the nest secrete a pheromone trail which they follow back to the nest. When an ant finds food, it secretes a stronger pheromone trail. Ants leaving the nest tend to follow existing trails; however, some wander off randomly because the volatile pheromone of unreinforced trails is weak and evaporates rapidly. "Exploration rather than hardwiring specific contingencies seems like the only practical means of responding to the variability or complexity of the environment. The ant cannot anticipate where food may be; the centrosome has no way of detecting the position of the chromosomes and directing the microtubules toward them; the nerve cell cannot maintain or express all the information necessary for the fine-grained pathfinding decisions required to find its many targets and to cope with physiological variability" (Gerhart and Kirschner 1997: 193). Environmental changes produce coordinated changes in neuronal groups, and neuronal exploration allows the development of new linkages among neuronal groups, extending the opportunities for generating new contingencies and thereby serving an ongoing physiological function where the environment remains forever changeable. This mechanism creates a wide variety of linguistic meanings upon which selection eventually acts at the social level.

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